reference point → moving anticlockwise.
Every turn shd be left turn

1) $T(n) = nT(n-1) + n$, if $n>1$.
$= 1$ if $n=1$

2) $T(n) = \Theta(1)$ if $n < 140$
$= T(\frac{n}{5}) + T(\frac{4n}{5}) + \Theta(n)$ if $n \geq 140$

3) $T(n) = 2T(\frac{n}{4}) + 3T(\frac{n}{6}) + \Theta(n \log n)$; $n \geq 1$
$= 1$

=) i) $T(n) = nT(n-1) + n$

=) $T(n) = aT(n-b) + f(n)$ =) $f(n) = \Theta(n^k \log^p n)$

$\boxed{p=0}$

$k=1$

Akra bazzi

$$T(x) \begin{cases} \Theta(1) & \text{if } 1 \leq x \leq x_0 \\ \sum_{i=1}^{k} a_i T(b_i x) + g(x) & \text{if } x > x_0 \end{cases}$$, $b_i \in (0,1)$

$$\sum_{i=1}^{k} a_i b_i^p = 1$$

$$T(x) = \Theta\left(x^p \left(1 + \int_1^x \frac{g(u)}{u^{p+1}} du\right)\right)$$

$T(n) = n\,T(n-1) + n$

Master's Theorem for ~~Divide & Conquer~~ Decreasing

$T(n) = a\,T(n-b) + f(n)$

$f(n) = \Theta(n^k \log^p n) = n$

$\therefore\ k=1,\ p=0.$

$\log_b a = \log_1 n$

**

Ex: $T(n) = T(\sqrt{n}) + \log n$

$n = 2^m$

$= T(n^{1/2}) + \log_2 n$

$T(2^m) = T(2^{m/2}) + \log_2 2^m =$

$T(2^m) = T(2^{m/2}) + m$

$S(m) = T(2^m$ $\qquad S(m/2) = T(2^{m/2})$

$\therefore S(m) = S(\frac{m}{2}) + m \Rightarrow S(m) = O(m) = T(2^m)$

$T(n) = O(m) = O(\log_2 n)$

Ex: $T(n) = T(\sqrt{n}) + 1$ $\qquad O(\log_2 \log_2 n)$